App. F. IX-4

Previous References

1928. (Jan.) **File No.** 39-28.

Serial Nos. 7-9

Later References

p. 20(2)

General and Revenue Secretariat.

Serial Nos. 7 to 9

Part B for March 30

SUBJECT

Report of work done by Mr. M. Shamsuddin, Khan Assistant Superintendent of Agriculture under training in Japan

D. No. 154 of 5.7.29

Dir. Agr.

Communicates certain observations of Govt. on Mr.

2 wks

G.R.S. III—3]

Routine Notes.

[To be used only for notes, requisitions, etc., not intended for permanent record.]

Telegraphic Address: "INDUSCOM."

In reply please refer to No. Di-2359/28-29

GOVERNMENT OF MYSORE.

DEPARTMENT OF INDUSTRIES AND COMMERCE.

OFFICE OF THE FIRST MEMBER OF COUNCIL 29 MAY 1929 No. 7426

OFFICE OF THE DIRECTOR, Dated Bangalore, the 22nd May 192 9

GEN. & REV. SECRETARIAT 25 MAY 1929 DEVELOPMENT BRANCH

FROM

C. RANGANATHA RAO SAHIB, ESQ., B.A., B.L.,
Director of Industries and Commerce in Mysore,
Bangalore (India).

To

N. Rama Rao, Esq., B.A., B.L.,
Secretary to the Government of Mysore,
Development Departments, Bangalore.

SIR.

I have the honor to submit herewith for the information of Government copy of report of work done by Mr. K. Shamsuddin Khan, Assistant Superintendent of Sericulture on Deputation, from 16th Novr. 1928 to 15th Feb. 1929 received from the Superintendent of Sericulture with his No. 5019 dated the 23rd April 1929.

I have the honor to be,
Sir,
Your most obedient servant,

Director-in-charge.

N.B.—Should routine notes be written on small slips, the notes must be copied, or slips pasted on this form.

Serial No.	
D. 10023.	Sent with a draft. 14.4.29.
	2 Secy Com 29.6.29
No. 8	D 154 of 5.7.29. To Dublin Govt. Communicates Certain Observations of Government on the several points referred to in the Report
	H.S.M. H.E. & REV. SECRETARIAT. 6 JULY 1929 DEVELOPMENT BRANCH.
9	Letter No. D4-2359-27 dated 24th March 1930 Submitting his remarks on the points referred to in S.I.S No Fisheries &c
(2)	2. Subsidiary Memo with refce. as S.
(1)	18.29.3.30.
6049 4/4	1st Secy) Secy 4/4 7.4.30 Secy 8/4 9(1)30 9.4.30 Secy 9/4
B	

Note—Contn. Sheet

/3314 3

1.

Letter No. 9. Dated 6th March 1929. From K.Shamsuddin Khan esq, B.A., Asst. Supt. of Sericulture (on Deputation) Koto Sanshi Gakko, Nishigahara, Tokyo, Japan. To the Superintendent of Sericulture in Mysore, Mysore.

I have the honour to submit herewith a brief diary of work done by me from 16-11-28- to 15-2-1929. for favour of information.

****

A brief Diary of work done from the 16th of November 1928 to 15th of February, 1929.

During the above period I worked in Pathological Bacteriological Laboratories and in Filature of Tokyo Higher Sericulture College. The work done consisted mainly with Pebrin, Muscardine, Grasserie, and Flacherie, and Cooking of Cocoons, amd stuky of Cooking machinery and Drying chambers.

Silk-worms in various stages of growth were injected with Pebrine and allowed to develope, worms injected with Grasserie fluid, worms injected with Botrytis Bassiana (Muscardine), worms injected with Bacillus Sotto (Flacherie) were taken up for Cytological and Histological work (worms of various stages and of different interval injedtions), That is with a view to determine duration and developemental stages of the various diseases of silk worms and to determine their effects on the various organs and tissues.

Pebrine.

Worms injected with Pebrine fouid at various intervals and of various stages were put into Carnoy's solution (pure alcohol 60 cc glacial ascetic acid 10cc chloroform 30cc) for four hours and then transfered ~~to 60%, and absolute alcohol, for periods of four hours and then transfered to 60%,~~

70% 80% 90%, 95%, and absolute alcohol, for periods of four hours in each separately. Then the worms were put into alcohol and xylol (equal parts) for four hours and subsequently tran-sferred to pure xylol for four to five hours and then to saturated solution of paraffin in xylol and finally to paraffin bath for four hours (at 65 degrees Cent). Paraffin blocks were made and after mounting microtome sections (5 to 10 μ) of all worms and of various organs and tissues were made and mounted on glass slides finely smeared with egg albumen and glycerine. After drying the slides in the thermostat they were successively kept in xylol, absolute alcohol, 90%, 70%, 50% alcohol for ten to 15 minutes in each and then in distilled water for five minutes and then stained separately with Iron Haematoxlyn Heidanham, and Geimsa's stains and examined under microscope. Generally processes of fixing and staining were adopted from Vade Megum but modifications of these processes for Pebrine work were duly made to attain best of the results. The staining of Pebrin for Histological and Cytological work is a careful, skilful and laborious process, and in fact is a matter of repeated examination under microscope with alternate staining till the suitable and uniforn tinge is obtained in respect of each of the above stains. In cases where staining is overdone bleaching method is employed and thus suitable staining is obtained. As a rule Geimza's method gives excellent results The details pertaining to alimentry system, at various portions, Malphigian Tubules, nerves, trachea, silk glands, and in fact all organs and tissues were examined in detail under oil "immersion". The Pebrine corpuseles are best seen in long time injections sections that is in worms which have had the injection of Pebrine for a long time and in silk glands especiallly in reservoir portions of the silk glands. From the hundreds of sections examined it was found out in conformity with the generally accepted theory regarding Pebrine that Pebrine Corpuscles acted upon by the juice of the stomach are liberated and penetrating between the cells of the lining membrane of the stomach enter into blood where they develop into Planonts which get back to the stomach tissues and undergo further cycle of life. All

The muscular tissues of the stomach and finally enter

all tissues and organs are now invaded by Pebrine and the spores are seen best in the Microtome sections of silk glands especially those of the reservoir portions. The duration of life's cycle depends upon temprature. If the temprature is high the whole cycle may complete in five to ten days. For instance a worm attacked with Pebrine on its last day of larval stage indicates well developed Pebrine in the moth on the very first day of its emergence. Ordinary life of Pebrine spores is two years but in the absence of light combined with low temprature it lives for seven years. Infection takes place by three methods, namely, through eggs, through food and through abrasion on the body. In the first case the spores enter the embryo through the umbellicus. Pebrine is not an acute disease but is a chronic one.

4 The same processes were repeated in respect of worms injected with Muscardine (botrytis bassiana), Grassrie, Flacherie, and with worms infected with bacillus sotto. A few interesting and important facts are noted below.

Muscardine.

5 There are altogather eight well known forms of this disease in Japan and are as follows:-

1. White	muscardine is caused by	Botrytis Bassiana,	Imperfect fungus
2. Yellow	do	Isaria Farinosa	do.
3. Green	do	Nomuria Placina	do.
4. Black	do	Oospore desturctor	do.
5. Brown	do	Asper gillus flabus	Perfect
6. Red	do	Isaria fumosorisea,	Imperfect fungus
7. Orange	do	Aspergillus fulbus	Perfect fungus.
8. Silky white	do	Hergira entomofoera,	Imperfect fungus

6 Infection of worms is through conidial spores which settle on the body of the silk worm by means of wind etc. and send Mycelia in the tissues while Conidia are developed in trachea only indicating that oxygen is absolutely necessary for their growth. In the sections I made and examined there was a very large number in which in thirty six hours Mycelia penetrate as far as the external muscular layer of the stomach and there are sections in which in 72 hours Conidia are clearly seen inTrachea.

6

7 IN 96 hours death has occured. High humidity and bad ven-ntilation are the chief causes of the rapid development and spread spreading of diseases. IN any preventive measure special care must be taken of these two factors. It is an infectious and acute disease and worms never survive its attack. In Japan the chief remedial measure that is adopted is to treat the worms with a solution of 1 to 2% of Formaldehyde. Spreading nets over the muscardine worms that have been given paddy husk 1to 2% of formaldehyde solution is spread and the worms are allowed to remain for fifteen to thirty minutes and then transferred to another tray and fed. Great care should be taken to see that the treatment is not overdone as a more concentrated solution of for. aldehyde than 1to 2% is always injurious to worms. But if the operation is done properly crop is generally saved. This method has done well in Japan.

Muscardine is a disease rarely met with in Japan

8 Flacherice

The old theory that flacherie is due to bacillus soto has been found to be untenable. The recent theory which is supported by overwhelming experimental data is that flacherie do not indicate bacillus sotto, and all worms showing bacillus sotto do not indicate flacherie disease and in fact, it has been found that flacherie worms do sometimes contain bacteria megatherium. Moreover there is a positive evidence namely that the PH value of the juice of the stomach is reduced to 7.5 or even to 7 from 9.7 which is the normal PH value of the cycle of the silk worm. Besides worms fed with bad leaves reared in abnormal humid condition and temprature indicate fall in PH value and indicating bacillus sotto only rarely. Hence the old theory may be supposed to be exploded. Flacherie cannot therefore be supposed to be a contagious disease as was done formerly.

Recent theory is primarily physiological Disease. The evidences in support of this theory are that all worms that suffer from Flacherie do not indicate

This will have an important bearing on prevailing practice.

~~IN 96 hours death has occured. High humidity and bad ventilation are the chief causes of the rapid development and spread of diseases. IN any preventive measure special care must be taken of these two factors. It is an infectious and acute disease and worms never survive its attack. In Japan the chief remedial measure that is adopted is to treat the worms with a solution of 1 to 2% of Formaldehyde. Spreading nets over the muscardine worms that have been given paddy husk 1to 2% of formaldehyde solution is spread and the worms are allowed to remain for fifteen to thirty minutes and then transferred to another tray and fed. Great care should be taken to see that the treatment is not overdone as a more concentrated solution of for. aldehyde than 1to 2% is always injurious to worms. But if the operation is done properly crop is generally saved. This method has done well in Japan.~~

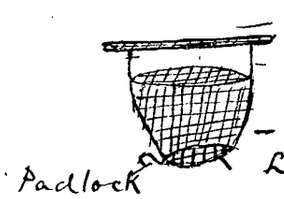
9 Its predisposing factors are bad seed, unsuitable and bad leaf, high temprature, high and low humidity, and bad ventilation

7

Thus prevention ff of flachrie merely reduces itlelf to rationalising rearing methods with reference to the above causes. Considerable attention is being paid in Japan to this aspect of ryots's rearing methods and remarkably good results have been achevied Bacillus sotto is only a secondary cause of flacherie disease. In no case has flacherie been found to be hereditary. It is needless to say how valuable it is in Mysore to pay attention to rearingh of silk worms from the recent view point regarding flacherie disease.

10 I worked for two weeks in the filature to study of cooking of cocoons and of drying chambers. In this college cooking of cocoons, as is general in Japan is centralized ix that is individual basins do not attend to cooking but cooking is done in a central place or cooking is a separate operation in one place for allthe basins. In this there are two methods namely hand cooking and mechanical cooking. In the former method a series of basins is arranged in a line in a separate room from the main filature. These basins are of glazed pottery and are cylindrical and measure twelve inches in depth and 12" in diameter. There is a perforated plate at the bottom of the basin, each basin receives a steam pipe connection and another of water. The steam tube opens under the perforated plate while the water tap opens above. The basins are filled threefourths to seveneighths of the depths of the basins and steam is let in. Cocoons (20 grammes of conditioned cocoons) are encased in a circular cocoon holder as of shape shown below.

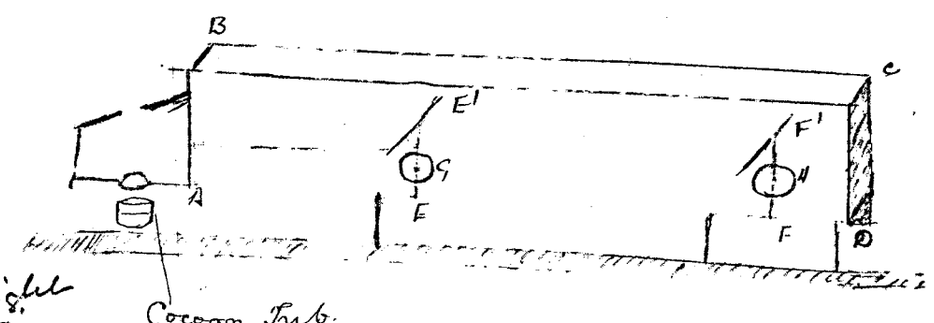
20
60 lb
40
20
about ½ lb of fresh cocoons



11 It has an iron weight bar which is supported by two thick wires perpendicular to the cocoon holder which has a lid and a padlock by means of which cocoons are completely encolsed. The cocoon holder is filled with twenty grammes of conditioned cocoons and after shutting the lid is inverted into the basin so that the

the weight bar rests on the margin of cooking basin whose temprature is 208 to 210° F. After 25 to 30 seconds the cocoon hold-er is transferred to the next nasin containing water at a temprature of 160° F. and kept there for 5to 7 minutes and then transferred to the next basin which contains water at 210° F. and kept in the basin with the cocoon holder for three minutes. The lid is then opened and the cocoons are covered in the same basin by means of lidless cocoon holder for two minutes and then the latter is removed and cocoons are stirred by means of a thin and small brush for two minutes. Subsequently the cocoons are removed out of the third cooking basin and transferred to a wooden hand tub containing water at 160° F. and passed on to the reeler who reels the cocoons in the reeling pan containing water at 180 to 190° F.

2 The second method is mechanical and is simply the application of principles of the first method. Of the various mechani-cal contrivances I note below one which has claimed much attention now a days. A rough diagramatic sketch of the appratus is given below.



3 A B C D is a wooden box lined with metallic sheet and is 15 feet long 18inches wide and two feet high. It has three compartments namely AE, EF, FD, which are 6½, 6½ and two feet in ~~leng~~ length respectively and the verticle partitions EG and FH are about 12 inches in height. At the bottom of the tank are arranged steam tubes and each partition has got a hot water supply connection separately. On pivots in the centre of the tank at the bottom of the compartments, there are brass circular rods 1¼" in diameter. These circular rods are grooved, the groove being in one circular thread just like the thread of a screw, the depth of grooving is about ¼" and

and breadth about ¼". Each box has an independent rod but the ends are made contigous by means of connections such that all the rods move at the same time. These rods are rotated by means of toothed wheels at each extreme end and these toothed wheels move against toothed wheels which are mounted on a shaft which has a turn pully connection with the main shaft of the filature and the rotation is so adjusted that the rods turn in a manner to correspond with the cooking time in each partition of the cooking chamber. At points E and F there are drum wheels which have at opposite ends curved hooks for lifting cocoon boxes as they travel on the central grooved rods. These drum wheels are so adjusted that the movements or rather the rate of motion in each semicircle is different, that is if the arch ABC moves in time T the corresponding movement of arc ADC is fraction of T. The two drum wheels systems at each junction namely partitions E and F are mounted on axle X and their outward axle point has a wheel (differential) as shown in the figure. B is attached to B'. The are A' B' C' as it turns by pulley motion revolves sooner and the hook of drum wheel lifts up the cocoon box, throws over along the incline into the next chamber. The same process repeats in the next chamber also. 20 grammes of conditioned cocoons are put into each compartment of the wire gauze box, there being two such compartments in each box. The box is completely closed and mounted or dropped into the chamber quite straight such that the box moves along and in contact with the central grooved brass rod till it reaches the drum wheel where, as described above it is lifted up by the hooks and transferred to the next contiguous chamber. The temprature in the first chamber is 210° F. and the water in the next chamber is kept at 160° F. and in the last chamber the temprature of the water if 210° F. The cocoons from the last chamber travel over an imcline and open themselves into hand tubs placed below and containing water at 160° F. These tubs are subsequently transferred to reelers. The cocoon cases move on the rod in virtue of its motion its groove, and the passage of cocoone boxes from one chamber to the other in virtue of drum wheels whose outside attachment wheel has the rate of motion diff-

differing in its two semicircles as already described. Cooking is done by unequal treatment method, namely cooking at 210° F for 25to 30 seconds and then at 160° F for 5to 6 minutes and then in 210° F for 5 minutes. The cooking chamber is covered above and on sides by wooden and glass shutters and each portion of the cha -ber has an exit for extra water vapor and exhausts for gum water It may be added here that when there is more than sufficient quantity of sericin in any of the chambers water is discharged immediately and the tank is refilled. The hand tubs that receive cooked cocoons contain water at 160° F from a tank which is kept at t at temprature. These are the essential mechanical contrivances but several modifications for mechanical movements of the cocoon boxes have been effected for instance instead of a grooved rod chain and pulley drive are employed and instead of having outside pulley of the drum wheel having differential move -ments one continous movement wheel is used but the rod system and also that of differential movement system are better and are easy of adjustment.

This mechanical method of cooking cocoons is so satisfactory that no complaints are made by the reelers and in fact the cooking is neither under or overdone. IN Mysore these methods of cooking might with great advantage be employed after actually determining the temprature and time necessary for Mysore cocoons as the sericin content of our cocoons is different fr from that of Japanese cocoons.

Drying Chambers

14 These College has two types of drying chambers viz hot air drying by passing steam into iron tubes or hot air by electrical heating. At present I can only detail the mechanical construction of these chambers and the underlying principles. I have not yet had the benefit of actually conditioning cocoons this being off season for this operation in Japan. The main point in the Construction of the chambers is the alternate fixture of hot air pipes and electric fans which are essential to equalize temperature and keep it at a uniform degree all through the chamberfor

11

chambers for, three hours which is the time necessary for the optimum (conditioning)of cocoons. This method is obviously more convinient for there is no change of trays from one tyre to the other which saves labour and economises heat and is quick in operation without at the same time exposing the cocoons to alternate high and low temprature when the trays are to be changed from one tyre to the other as in the old systems. The cocoons are well conditioned as I have seen them several times before and have had no difficulty in reeling such cocoons. There is no loss due to overheating. I shall furnish detailed mechanical plans of the drying chambers and of cooking apparatus as early as I can. The other drying chambers that are in filatures in Japan are modifications of the two types that I described below with modifications to suit the conditions of the local filatures. But the essential principle is of even temprature by means of fans and alternate exit tubes.

15 The chamber is made of wire cut bricks in cement. It is about 25'long 11' wide and 10' high. Its roof is terraced. In front or at the opposite sides there are metallic sheet doors which close hermetically when conditioning is being carr-ied on. At the bottom of the chamber are arranged steam pipes of 2" diameter and they are about 60 in number. On the sides of the walls are fixed alternately hot air exit tubes of the shape shown in the diagram. There are two such exit tubes on each side. Alternately with these are fixed at a lower level than that of the exit tubes electric fans two on each side. The arms of the fans are about 15" long. The thermometers to register tempratures are fixed on the long wall outside and also on to the doors of the chambers. In the middle of the chambers there are parallel iron rails about three feet apart on which move the trolleys having cocoon trays made of wire gauze. The trolleys are 8' high 8'broad and 8' wide. The distance between each tyre of trays is 7 to 8 inches. The temperature within the chamber is kept at 210° F. and the cocoons are kept in the chamber for about three hours when conditioning will be complete. In the chambers heated elec-

12

-tsically all the arrangements are similar to the chambers heated by means of steam except that heating is done by means of wire coils through which electric current passes. Both the processes are equally good but economically considered steam is preferred in Japan.

Translation Work.

16 Besides the pathological work and work in filature I Commenced translation of a note on Sericultural policy in Japan prepared specially for me by the Assistant Secretary to the Imperial Ministry of Forestry and Agriculture. The help of a Japanese had to be sought for and half of the lengthy Note of about 120 pages has been translated and so soon it is completed it will be submitted.

There is one by Jou Dé, but it is not very good.

17 I commenced translation of a book in anatomy of silkworms the need for which is keenly felt and will be of use to students in Mysore as there is no book in the English language on anatomy of silk worm. The task is difficult, but I hope to be able to get through the whole book by the time I leave Japan. Translation work is extremely difficult as all books are written in Chinese ideographs which cannot be mastered in a few years time and much less in months.

25 Besides enquiries in various quarters regarding dimensioned drawings of a plant for silk waste, rayon and pupa oil sope were made.

29 I may add that special lectures in silk worm genetics are being given by Professor Tateiwa durin g nights entirely for my benefit.

(sd) K. Shamsuddin Khan
Asst Supdt of Sericulture (on Deputation in Japan).

5019
23-4-29

OFFICE OF THE SUPERINTENDENT
OF SERICULTURE IN MYSORE.
MYSORE.

copy submitted to the Director of Industries and Commerce in Mysore Bangalore for favour of information.

H. S. Sundara Rao
Superintendent of Sericulture in Mysore

Appendix F G –1

13

SUBJECT.....

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Section Jeri

File No. 34-28

Serial No. 8

Diary No. of letter replied to.....

No. D 154

General and Revenue Secretariat

( )

the *192*

To

The Dir. of Fis

Date of issue 4/7/29

Signed by H. C. S. Narasimhan

Sir,

With reference to your letter No. D4-2359 dated 25th May 1929 submitting a report of work done by Mr. Shamsuddin Ishaq during the period 16th Nov. 28 to 15th Feb. 1929, I am directed to communicate the following observations of Govt. on the general points referred to in the report:

List of enclosures.....

Copied by.....

Examined by.....

Fisheries (Para 8 of report): Some experi-

over

measures may be carried out.
to make sure that this disease
is not contagious.

Cooking of Cocoons: (Para 10) It is
understood that N.V.M.A.
Foundation was thinking of
trying centralised cooking
A report may be issued if
the experiment has been
made, and if so, with what results.

Mention is made in the
report (Para 13) of a mechanical method
of cooking cocoons. It is suggested
if the hand method is tried first
with a view to determining the best
temperature and time for the testing
and Sericin Content of Mysore
Cocoons, and then the machine reported
by Mr S. Ishaq might be tried.
A machine ~~this~~ kind described plain given
by ~~Mr S. Ishaq~~ kindly may be ordered for
use in the Dept.

Yours

CKV
29.6.29

Dr D Lang

18.4.6.29

Seri 39-28 RR

TELEGRAPHIC ADDRESS:—"INDUSCOM."

In reply please refer to No. D4.2359/27-28

GOVERNMENT OF MYSORE. 15

DEPARTMENT OF INDUSTRIES AND COMMERCE.

OFFICE OF THE DIRECTOR,

Dated, Bangalore, 25th December *19* 29.

FROM

C. RANGANATHA RAO SAHIB, Esq., B.A., B.L.,
Director of Industries and Commerce in Mysore,
(Bangalore, India.)

To

N. RAMA RAO, ESQ., B.A., B.L.,
Secretary to the Government of Mysore,
Development Departments,
Bangalore.

GEN. & REV. BRANCH 5714 6 JAN. 1930 DEVELOPMENT BRANCH

SIR,

With reference to Reminder No.D.6165/Seri.39-28-8 dated 6-12-1929, calling for a report of action taken on the observations of Government contained in your letter No. D.154/Seri. 39-28-8 dated 5-7-1929, I have the honour to state that a report in the matter due from the Superintendent of Sericulture has not yet been received in this Office. I will submit my report to Government soon after the receipt of information from the Superintendent of Sericulture. I have reminded the Superintendent of Sericulture to expedite the submission of his report.

I have the honour to be,

Sir,

Your most obedient servant,

C Ranganatha Rao Sahib

DIRECTOR.

GEN. & REV. BRANCH 7 JAN. 1930 DEVELOPMENT BRANCH

BV-2.

Seri. 39-28-9.

TELEGRAPHIC ADDRESS:—"INDUSCOM."

In reply please refer to No. D4-2359/27-28

GOVERNMENT OF MYSORE.

DEPARTMENT OF INDUSTRIES AND COMMERCE.

16

OFFICE OF THE DIRECTOR,

Dated, Bangalore, 23rd March 1930

FROM

C. RANGANATHA RAO SAHIB, Esq., B.A., B.L.,
Director of Industries and Commerce in Mysore,
(Bangalore, India.)

To

SEC. & REV. DEPT. 25/3 8241

N. Rama Rao, Esq., B.A., B.L.,
Secretary to the Government of Mysore,
Development Departments, Bangalore.

SIR,

Subject

Orders of Government on the report of work done by Mr. K. Shamsud-in Khan, Assistant Superintendent of Sericulture under training in Japan during the period 16th Novr. 1928 to 15th Febry. 1929.

With reference to your letter No. D. 154/Seri. 39-28-8 dated the 5th July 1929 communicating to me the orders of Government on the above subject, I have the honor to submit herewith a report received from the Superintendent of Sericulture showing the action taken in the matter. I shall request the Superintendent of Sericulture to carry on experiments with a view to determine whether Flacherie is or is not a contagious disease as soon as the New Probationers have received sufficient ttaining to be put on this work to carry it on under the Superintendent's guidance. The information given by Mr. Shamsuddin Khan on this important subject is so meagre that no reliance can be placed on his conclusion. I have requested the Superintendent of Sericulture to kindly instruct Mr. Shamsuddin Khan to submit a fuller report on the subject. An Ameri-can Expert working in China says the following re: Flacherie -

> "Essentially a fermentation disease, flacherie may be brought on by anything that would facilitate the development of fermentation processes in the body of the silk-worm . . . . .Flacherie is extremely contagious, once gaining entrance to a rearing room, it sweeps everything before it".

The system of centralised cooking by the hand method has not given satisfaction. I am requesting the Assistant Superintendent to give it a further trial on the lines reported to be carried in Japan. It is obvious that the experiments arising out of Mr. Shamsuddin's reports

can only be best undertaken after his return so that his direct knowledge may be available to the staff to ensure that the experiments are carried on right lines.

As regards the centralised cooking by the Mechanical method, it is seen both from the periodical reports of Mr Samsuddin and other recent literature on the subject that such centralised cooking is a very important factor in the production of a superior grade of silk. The design of the apparatus he has given in his letter in that given in page 43 of the book on "Raw Silk Industry" of Japan, a copy of which has already been sent to Government. This method is reported to be almost universally used in Japan. It involves however a great extension in our Filature to about 75 basins. I shall submit proposals on this matter after the filature is removed to the new building.

I have the honor to be,
Sir,
Your most obedient servant,

C. Ranganatha Rao Sahib
Director

usc)

DEPARTMENT OF SERICULTURE

MYSORE STATE

MR. H. S. GOVINDA RAO. B.A.,
Tel. Address—"SERI"

OFFICE OF THE SUPDT. OF SERICULTURE IN MYSORE,
EXHIBITION BUILDINGS.

3787 *Mysore,* 31st December 1929.

FROM

H. S. GOVINDA RAO, ESQ., B.A.,

Superintendent of Sericulture in Mysore.,

MYSORE.

To

C.Ranganatha Rao Sahib, Esq., B.A., B.L.,
Director of Industries & Commerce in Mysore,
Bangalore.

SUBJECT AND REFERENCE—

SIR,

With reference to your No. D4- 2359/28-29 of 11th July 1929 forwarding to me copy of letter No. D-154/Seri. 39-28-8 of 5th July 1929 from the Development Secretary to Government, I have the honour to report as follows:-

1. Flacherie:- Arrangements have been made to try some experiments to determine whether flacherie is a contagious disease, as soon as the staff in the Experimental Section are trained properly. Some general experimental work was undertaken in this section when Mr. T.K.Krishna Murthi was working here but since he went away to Bangalore, the work in this section has had to be ~~unfailed~~ curtailed for want of trained staff. Now that a B.Sc., has been appointed for work in this section as a temporary Inspector, he is being given training in experimental work.

Experiments regarding flacherie will be taken up by March 1930 by which time, the Inspector will have gained some experience in Experimental ~~Section~~ work.

2. Cooking of Cocoons:- Centralised Cooking was tried in the Filature. The results were not satisfactory. The out put per basin per day was less and the rendita was more than in the ordinary method, probably due to the fact that the Mysore Cocoons are not so good as Japanese cocoons and that each reeler attends to seven ends in our basins as against only four in Japanese Basins. This will be tried again after Mr. K.Shamsuddin Khan's return as he would be in a position to give more detailed information in the matter

3. Mechanical Method of Cooking Cocoons:-

The quality of cocoons produced in Mysore depends upon the locality, the climatic conditions and the method of treatment of worms after mounting. The best temperature of the water and the period of Cooking are being determined for each lot of cocoons to be reeled in the Filature. Arrangements have been made to obtain cocoons from Kolar District also to determine the best temperature and time for cooking as the cocoons used in the Filature are mostly from the Mysore District.

Mr. K.Shamsuddin Khan has been requested to study the type of plant required for our Filature and to obtain estimates regarding cost etc.

I have the honour to be,

Sir,

Your most obedient servant,

Superintendent.

MRV.

Remarks of the Development Secretary
on the
several paras of the Report
of the
work done by Mr.K.Shamsuddin Khan.

Para.	Remarks.
7.	Muscardine is a disease rarely met with in Mysore.
8.	I did not know this.
	This will have an important bearing on grainage practice.
10.	~~30/227~~ lb about ~~and~~ 1/7th lb of green cocoons. 180.32 $\frac{148 \times 101}{180}$ $\frac{5}{9}$ 9 $\frac{740}{82\ C}$ Much higher than the temperature of reeling water ordinarily used.
13.	The hand method might first be tried, with a view to determine the best temperature and time for the texture and sericin content of our cocoons and then the machine might be tried. ~~Drum Wheel~~. ~~Same as axle~~. ~~Outside differential wheel~~.
19.	I cannot follow the description. The best course is to order out a machine There is one by Mr. D e , but it is not very good.

14.
28 5
29.